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Institutional Analysis of Recycling and Waste Management in the Cincinnati Region

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Executive Summary

The purpose of this institutional analysis is to identify priorities, opportunities, and barriers related to recycling and waste management in the Cincinnati area. The study was prepared by the Center for Urban Innovation (CUI) at Arizona State University (ASU) on behalf of Beyond 34, the U.S.Chamber of Commerce Foundation (USCCF), and the Rob and Melani Walton Sustainability Solutions Service (RMWSSS).

CUI completed 16 full interviews with organizational stakeholders operating in the waste and recycling value chain in Cincinnati. The most common response across stakeholder interviews was that education is the most critical issue to the Beyond 34 goals, as well as an opportunity for moving toward those goals. Stakeholders identified the lack of education and awareness as a barrier to achieving Beyond 34 goals, but also as an essential element to increasing the recycling rates associated with each stakeholder audience.

The second dominant theme from the interviews centered on “the landfill issue.” Almost half of the interviewees indicated that the reduction of landfill materials as a key priority for their organization. Furthermore, this theme emerged again in relation to the low landfill fees in the Cincinnati region, which impedes efforts aimed at increasing recycling rates using economic incentives.

Many of the respondents also noted a perceived lack of guidance by local government officials as a significant institutional element missing from the recycling space. This finding suggests that the current structures in place are insufficient to the task of increasing recycling rates in the region.

Finally, many respondents noted another institutional issue in the political sphere affecting their abilities to work towards the Beyond 34 goals: China's policy on restricting the importation of plastic or paper for recycling. This factor emerged more frequently than anticipated given that the privately owned materials recovery facility (MRF) in the area has stated that a majority of its material end-markets are domestic. This finding reinforces the fact that the change in China’s policies has fundamentally altered the nature of recycling markets in the United States.

From the findings of this analysis, there is evidence that optimizing recycling/recovery alongside deployment of infrastructure, education, and policy intervention could be a helpful component in moving the region towards a circular economy. Throughout these efforts, education and outreach must be an integral theme if changes to individual behaviors are to be achieved.

While non-response bias is always a concern in this form of research, the organizations included in the final data set do represent a wide array of different types of actors in the recycling space. CUI applied grounded theory and motivational interviewing techniques to secure interviews, the results of which yielded a qualitative consensus about recycling and diversion efforts that can inform new efforts going forward. Generally, the interviews identified several clear barriers, as well as a significant commitment on the part of organizations to the goal of increasing recycling and diversion, although attitudes about recycling appear to be changing due to changes in the marketplace.

The remainder of the report provides additional details of the analysis and more specific information about the results derived from the stakeholder interviews.

Introduction

The U.S.Chamber of Commerce Foundation and Beyond 34

The U.S.Chamber of Commerce Foundation (USCCF) is the nonprofit affiliate of the U.S. Chamber of Commerce and is dedicated to strengthening America's long-term international competitiveness. USCCF educates the public about the conditions necessary for business and communities to thrive, how business positively impacts communities and emerging issues, and creative solutions that will shape the future.

Beyond 34: Recycling and Recovery for a New Economy is a multistakeholder public-private initiative aimed at providing a scalable model to increase the U.S. recycling rate, currently at 34%. Led by USCCF, Beyond 34 launched in 2017 with its first pilot program in Orlando, Florida. Its overarching goal is to help communities, businesses, and cities apply a circular economy to create a more sustainable future. Beyond 34 is now partnering with ASU and the City of Cincinnati to apply its model in the city, which resides in Hamilton County.

Rob and Melani Walton Sustainability Solutions Service

The Rob and Melani Walton Sustainability Solutions Service (RMWSSS) is an education and research program at ASU that was established to advance sustainability solutions locally and globally. RMWSSS engages diverse teams of faculty, students, entrepreneurs, researchers, and innovators to collaborate and deliver sustainability solutions across the world, provide learning opportunities for future and current sustainability leaders, and engage audiences of all ages to take action and champion sustainability solutions.

In 2015, RMWSSS formed the Resource Innovation and Solutions Network (RISN) to focus its waste diversion and circular economy expertise toward advancing integrated resource management through a global network of partners using collaboration, research, innovation, and technology to create economic value and drive a sustainable circular economy.

The Center for Urban Innovation

ASU's Center for Urban Innovation (CUI) develops new ways for public officials, private entrepreneurs, nonprofit agencies, and citizens to work together to address the challenges that confront metropolitan areas around the U.S. from the neighborhood to the regional level. CUI's research mission addresses questions of public leadership, meaningful democracy, and the governance reform through new structures and processes such as regional cooperatives and neighborhood empowerment. As ASU's

focal point for research on urban policy and management, the center brings together urban scholars, policy practitioners, and graduate students to design innovative, practical, and sustainable solutions for the challenges of today that also offer the flexibility to serve the needs of tomorrow. CUI accomplishes its goals through basic and applied research disseminated through books, academic journals, research reports, and public testimony, as well as through training and development activities for local government officials. Through these efforts, CUI assists communities in establishing their collective goals, mobilizing resources and implementing policies to achieve them, and delivering services effectively and efficiently to improve the quality of life for citizens.

The Purpose of the Institutional Analysis

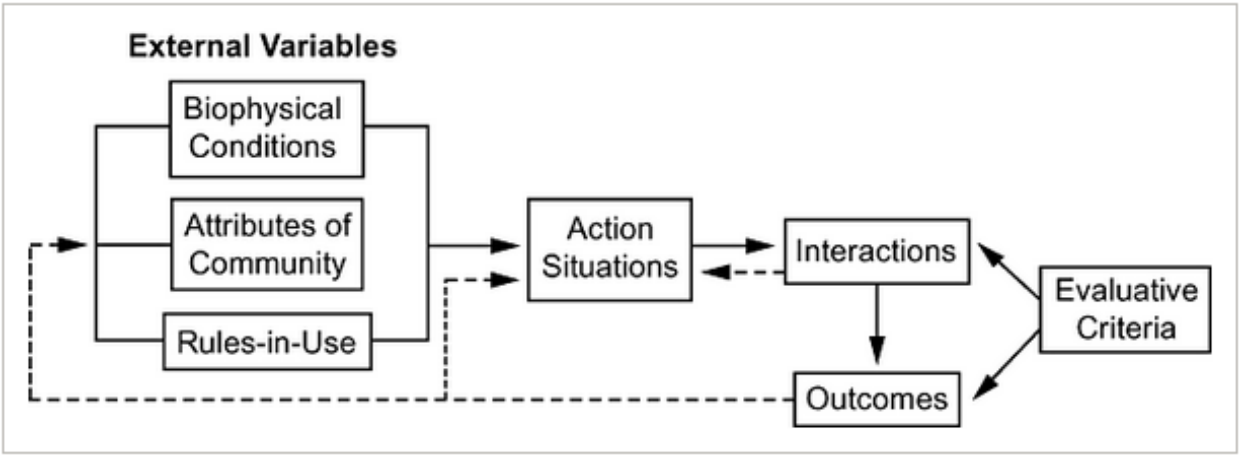
RMWSSS enlisted assistance from CUI to conduct a basic institutional analysis to map the actors, opportunities, and barriers related to the Beyond 34 effort in Cincinnati. This study's analytical approach is derived from several disciplines and uses the institutional analysis and development (IAD) framework to map the rules and norms of interactions between institutions (including public, private, and non-profit agencies) that govern the individual-level behaviors within a specific policy or action domain. Figure 1 illustrates the IAD framework.

The IAD framework is theory and model agnostic. It purposefully leaves any theoretical expectations for the analyst to specify for the given study, thereby encouraging a multidisciplinary approach of more precisely specified theories and models to understand policy issues under investigation. Ostrom (2006: 5) noted that such a flexible approach allows analysts to employ "multiple methods to attack tough analytical puzzles." Analysts can use the framework to integrate traditional tests of hypotheses about the explanatory (and predictive) ability of models. Similarly, numerous quantitative and qualitative methods are compatible with the IAD framework. Through the IAD framework, the analyst can trace a given policy process from pertinent events, important actors, and the actions the actors take in light of events. Ostrom and Cox (2010: 455) described the framework as a way to map "patterns of interactions, outcomes and an evaluation of these outcomes."

The core of the IAD framework is the "action situation," defined as "an analytic concept that enables an analyst to isolate the immediate structure affecting a process of interest to the analyst for the purpose of explaining regularities in human actions and results, and potentially to reform them" (Vries and Kim 2011:121. Action situations are where individuals (people, institutions, firms) engage with one another, exchange goods and services, solve shared challenges, fight or seek dominance over one another, or carry out any number of other actions that might emerge from engagement. The framework is

a way to illustrate how players are constrained by events, governance rules, other players, and physical environments in an action situation, “and can encompass nearly any socioeconomic dilemma and the policies that emerge from it” (Ostrom and Cox 2010: 455). Figure 1 highlights the ways components of action situations affect other components and create feedbacks. For instance, policy actions are constrained by “rules-in-use,” and rules constrain the outcomes of action situations. However, the action situation may generate new rules, thus creating new action situations that influence outcomes.

Figure 1: IAD Framework



Source: Ostrom (2005: 15)

The IAD framework seeks to predict the likely behavior of individuals (or institutions or firms) in a given action situation. When approaching a policy situation with IAD, researchers map and measure a range of variables to help understand the variables of the action situation across four general categories. First, researchers measure the resources actors can access and bring into the action situation. Second, researchers assess actors’ perspectives and evaluations of the state of the world, thereby helping the analyst to understand the actors’ sense of the constraints facing them. Third, researchers gain an understanding of how the actors collect, process, and utilize information in the action situation. Fourth and finally, researchers model how actors select their preferred actions.

After an identifiable outcome emerges from the action situation, the analyst can retrospectively or prospectively evaluate that outcome. As with other elements of the IAD framework, policy analysts can flexibly apply any number of possible evaluation tools or approaches to the evaluation. The selection of the appropriate tools will be driven, to some extent, by the goals of the actors and/or public affected by the outcome.

For Cincinnati, CUI applied the IAD framework to understand strategies and actions around waste diversion and recycling and identify organizational patterns of interaction as they pertain to diversion and recycling efforts. The purpose of this document is to share the results from the qualitative data-gathering efforts used to identify the opportunities and barriers available for policymakers. CUI undertook the data collection early in the project period to address the central elements of the framework with a particular focus on the actors who would be central to the success of new initiatives to increase recycling rates. In addition, these actors are also sources for determining certain contextual conditions (see the left side of the IAD framework diagram shown in figure 1).

Institutional Analysis

Recycling rates in the U.S. remained relatively stagnant until the emergence of the environmental movement in the 1970s. At that point, the rationale for recycling shifted away from meeting direct personal needs, as had been the case prior to the Great Depression, toward a focus on environmental protection. From 1965 to 2011, recycling rates rose from 6.2% to 34.7% (Tietenberg & Lewis, 2018: 177). Despite this increase, the U.S. still lags behind other industrialized nations such as Germany (65%), Switzerland (51%), and South Korea (59%) (OECD, 2015:52).

Recycling and waste diversion has a significant impact on local economies. A 2016 Recycling Economic Information report by the US EPA indicates that activities related to recycling and reuse in 2007 accounted for 757,000 jobs (1.57 jobs per 1000 tons of materials recycled), $36.6 billion in wages, and $6.7 billion in tax revenues (US EPA, 2016:6). A study completed by ASU, *Reuse, Repair & Recycle: Economic Impact Estimates in Hamilton County, 2018*, estimated the maximum indirect and direct gross economic impact of circular economy firms and activities in 2018 at more than $1.5 billion GDP, including 14,437 jobs paying more than $1 billion in labor income (2020: 5-6). For every person directly employed in the circular economy, an additional 0.9 new jobs are created elsewhere in the Hamilton County economy. Generalizing these findings to local economies nationwide, it is likely that a decline in U.S. recycling efforts would lead to decreased employment, wages, and local government revenues.

In 2018, Ohio had a 25% residential and commercial recycling rate and a 66% industrial recycling rate (Ohio EPA, 2018: 1) and in that same year, Hamilton County reported a residential diversion rate of 18%, a commercial diversion rate of 38%, and an industrial diversion rate of 73%. Cincinnati's 2018 reported residential diversion rate which includes green waste diversion was 22.25%. Without further initiatives and strategies

designed to increase recycling rates, Cincinnati may be unable to capture and capitalize on a large volume of valuable recoverable materials that currently end up in landfills.

The remainder of the report focuses on the results of interviews with several actors representing an array of organizations operating in this policy space in the Cincinnati region. These results can help to inform options and implementation strategies as the Beyond 34 project moves forward.

1. Interview Process

The data gathering for this element of the overall project centered on interviews with an array of organizations in the region. Under the direction of Dr. David Swindell, CUI led the development of a script and interview protocol built around elements of the IAD framework. Working with a team of students and RMWSSS, CUI winnowed the interview protocol questions down to nine overarching questions in order to minimize the time for the interviews and maximize the likelihood of interview completion. A full list of interview questions can be found in the Appendix. The next section of this report provides the organizational framing of the results.

In addition to developing the protocol, CUI also worked with the RMWSSS to develop a target list of organizations in the Cincinnati region that the team felt would be able to provide useful insights. Dr. Swindell trained a CUI student team on the protocol and interviewing techniques, and the team identified individuals within these organizations expected to have a good perspective to respond to the questions in a manner that helps map the institutional arrangements. CUI targeted 61 stakeholders from a wide range of organizations operating in the waste and recycling value chain in Cincinnati, 16 of whom completed full interviews. A breakdown of the stakeholder list, as well as the completed interviews, are listed in the table below.

Stakeholder Target List		Secured Interviews	
Private Sector	41	Private Sector	6
Non-profit Sector	5	Non-profit Sector	2
Public Sector	11	Public Sector	7
Academic Institution	4	Academic Institution	1

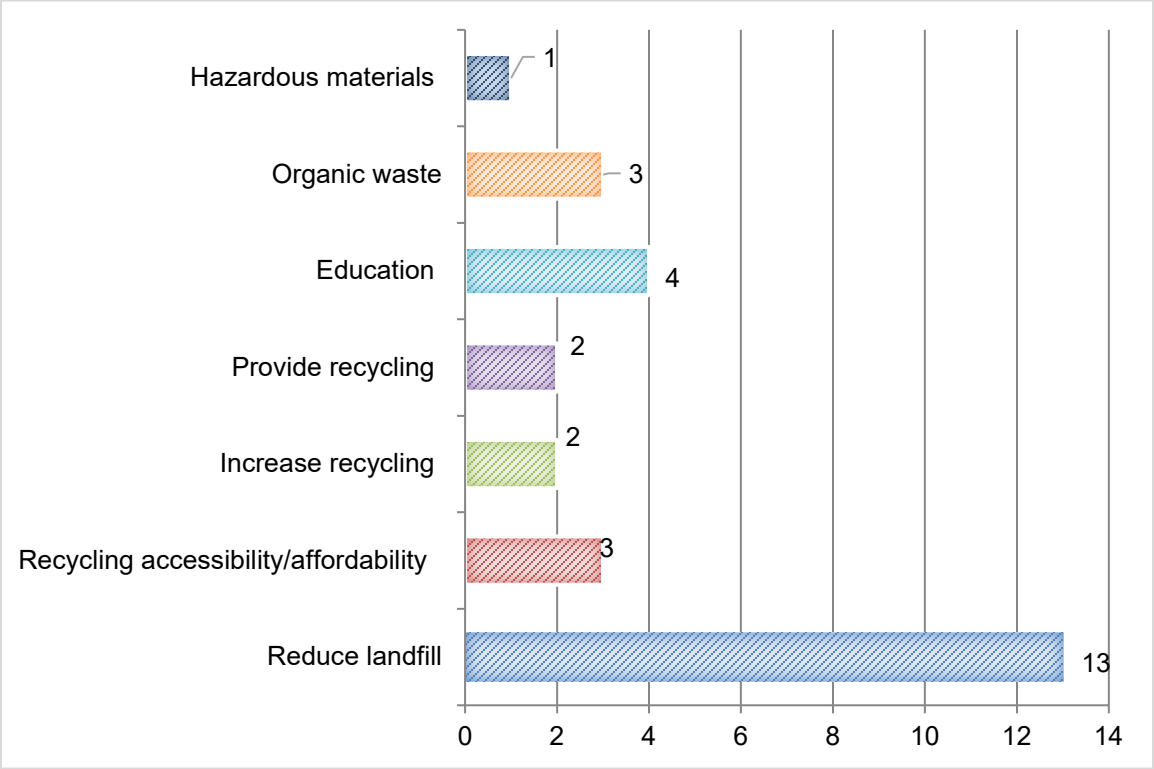
2. Interview Results

This section presents the results from the in-depth interviews of the sixteen stakeholders, consisting of nine questions some with multiple follow-up questions. The

interview protocol questions focused on the substantive aspects of the Beyond 34 initiative and serve as the framework for presenting these results.

2.1. Can you tell me what "the organization's" priorities are for waste management regarding recycling and diversion efforts concerning various materials now and in the future?

Figure 2: Organization Priorities for Waste Management



Note: The graph shows the number of total responses and keywords associated with the question. A respondent may have had more than one specific answer or some respondents may not have responded to the interview question.

The purpose of this question was to gain knowledge about the priorities of local organizations in regard to recycling and diversion efforts. Responses to priorities in regard to recycling and diversion efforts are split into seven categories: reduce landfill, increase recycling, education, hazardous waste, recycling accessibility/affordability, providing recycling, and organic waste.

The most common responses to the organizations' priorities were focused on reducing landfill material. More specifically, these responses focused on reducing the utilization of landfills in order to divert material towards recycling programs. One respondent specified that their main priority is to "reduce landfill rates, especially for food and paper

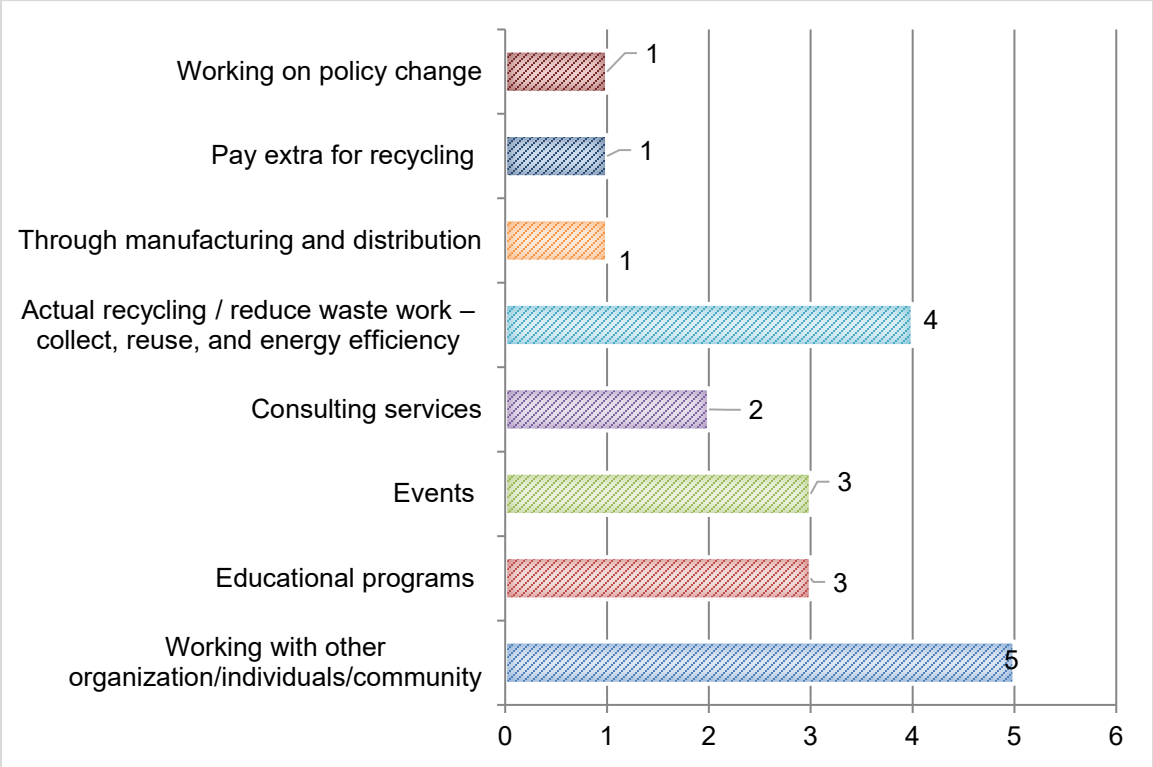
materials.” 13 respondents (81%) mentioned reducing landfill material as one of their main priorities (Figure 2).

The second most common response was focused on educational programs. More specifically, these responses mainly referred to outreach programs for children and adults in order to educate residents about recycling programs and zero waste programs within their communities. Four respondents (25%) interviewed mentioned educational programs as one of their main priorities (Figure 2). One respondent specified that their “main priority is to educate the children and adults about waste reduction programs in Cincinnati’.

The least common response was focused on hazardous materials and waste. This organization expressed that its main priority was to work with all audiences who create waste such as residents, schools, and businesses to educate them about waste reduction programs and how to manage hazardous waste properly. Only one respondent mentioned hazardous waste as one of their main priorities (Figure 2).

2.2. How would your recycling efforts be executed?

Figure 3: How Are Efforts Executed?



Note: The graph shows the number of total responses and keywords associated with the question. A respondent may have had more than one specific answer or some respondents may not have responded to the interview question.

The purpose of this question was to follow up with organizations to gather more information about how the organization's recycling efforts are executed. Responses to recycling effort execution are split up into eight categories: working with other organizations/individuals/communities, educational programs, events, consulting services, actual recycling/reducing waste, manufacturing/distribution, pay extra for recycling, and working on policy changes.

The most common responses were focused on working with other organizations, individuals, or communities. More specifically, these responses referred to multiple organizations' utilization of recycling programs, drop-off programs, direct service programs for waste, collaborating with other organizations that process material, and working with individuals to collect recyclable materials. Five respondents (31%) mentioned working with other organizations, individuals, or communities as one of their

execution methods (Figure 3). One respondent specified that their recycling efforts were executed through “community participation and collaboration with other agencies to process materials.”

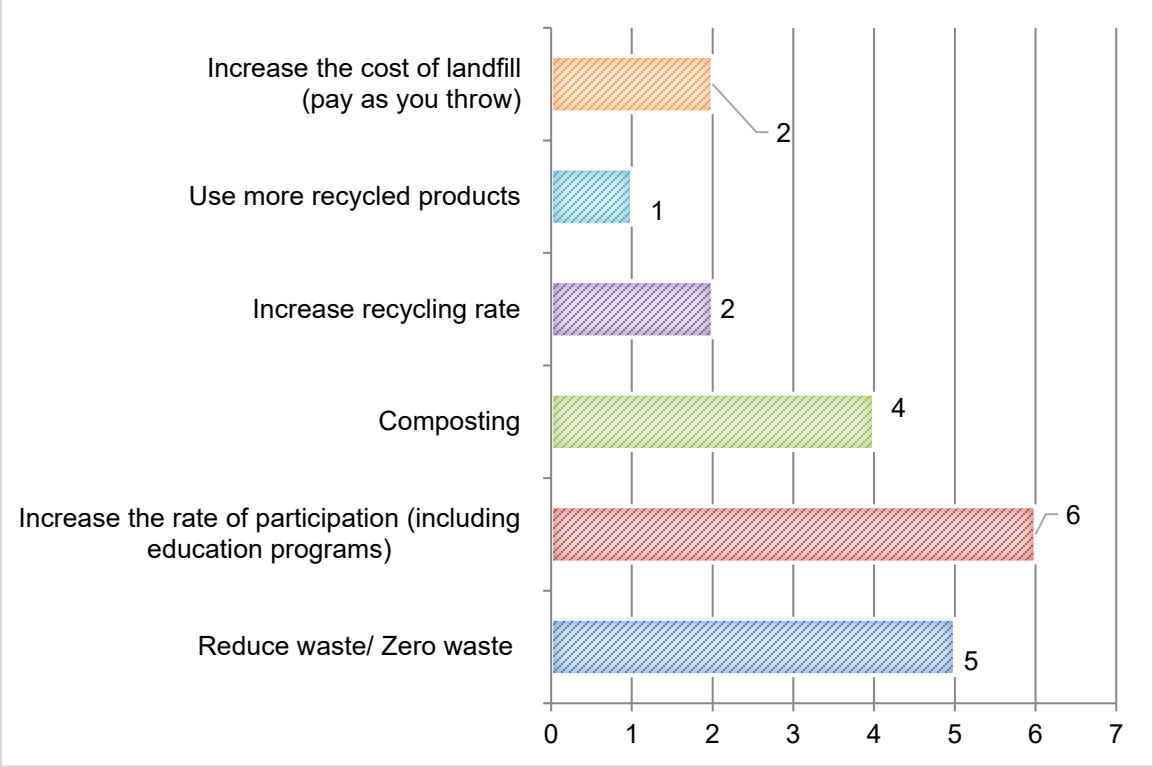
The second most common response was focused on the collection and reduction of waste and energy efficiency. More specifically, these responses ranged from reducing food waste to collecting specific waste materials for waste control or to auditing waste to determine the end location of different materials.[1] Four respondents (25%) mentioned working with other organizations, individuals, or communities as one of their execution methods (Figure 3). One respondent specified that their recycling efforts were executed through “the reduction of the use of napkins with washcloths” for their clients to use and reuse.

The least common responses were focused on educational programs, paying extra for recycling, and recycling through manufacturing and distribution with each topic only having one respondent per topic area (Figure 3).

[1] Auditing waste in order to identify the end location for materials is a method also known as waste logging. This method is used by an organization to identify whether the organization is diverting as much material as it possibly can away from landfills. In addition, it can also keep a running total of generation, recycling, composting, and landfill amounts.

2.3. Does your organization have any specific goals regarding increasing recycling efforts? What are those goals?

Figure 4: Recycling Goals



Note: The graph shows the number of total responses and keywords associated with the question. A respondent may have had more than one specific answer or some respondents may not have responded to the interview question.

The purpose of this question was to identify whether organizations had specific goals regarding increasing their current recycling efforts and if so, to elaborate on what those goals were. Responses to recycling goals are split up into six categories: reduce waste/zero waste, increase the rate of participation (including education programs), composting, increase recycling rates, use more recycled products, and increase the cost of landfill (pay-as-you-throw).

The most common responses were focused on efforts to increase the rate of participation.[2] Six respondents (38%) mentioned efforts to increase the rate of participation (Figure 4). One respondent specified that their organization's goals were

[2] Participation rate refers to the number of individuals who participate in educational programs, the number of people different organizations reach out to, and finding more end users who would re-utilize recyclable materials.

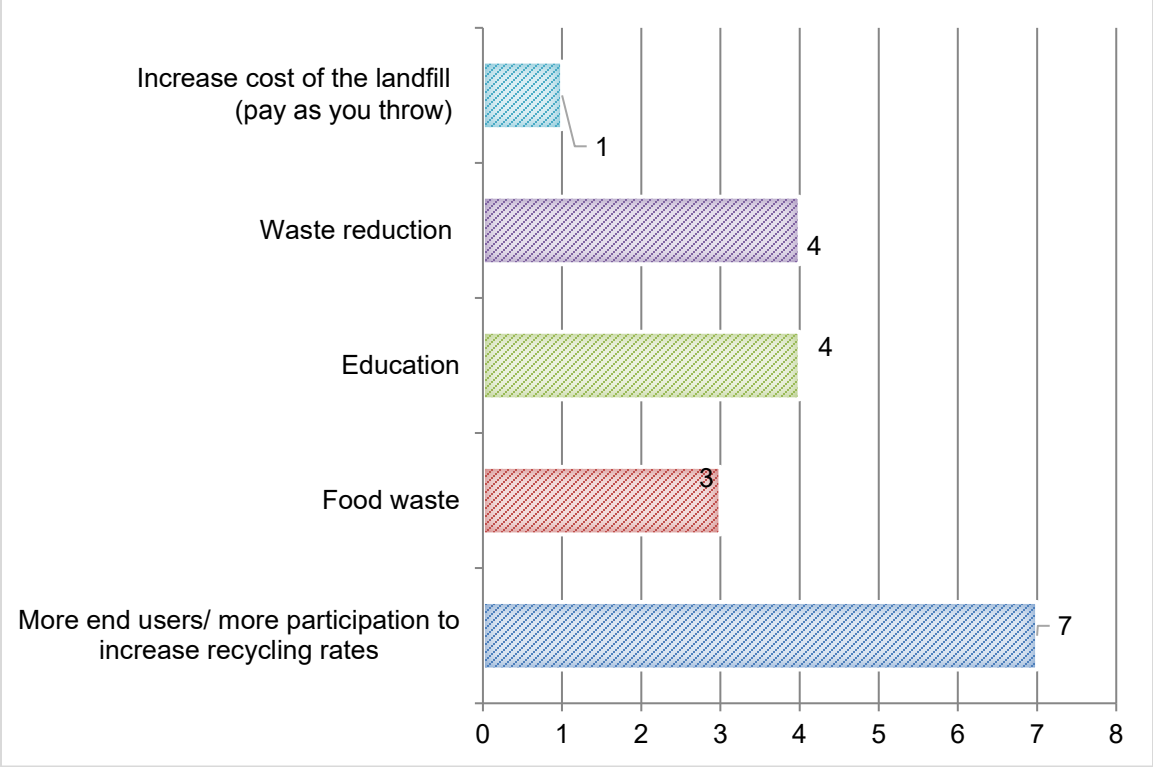
aligned with the state-mandated goals of a 25% recycling rate at the residential level and a 60% recycling rate at the industrial level.

The second most common responses were focused on efforts to reduce waste or create zero waste programs. These responses mainly referred to waste reduction through programs, events, policies, etc. Five respondents (31%) mentioned efforts to reduce waste or implement zero waste programs (Figure 4). One respondent specified that their organization's recycling efforts were "waste reduction-focused, not on increasing recycling rate."

The least common response was focused on efforts to use more recycled products. One respondent mentioned efforts to use more recycled products (Figure 4). This respondent specified that there is "a real need for more agencies to be able to use recycled products long term" in order to increase recycling efforts in Cincinnati.

2.4. Which of these would you say is the primary goal for your organization regarding Beyond 34?

Figure 5: Primary Goals Relative to Beyond 34



Note: The graph shows the number of total responses and keywords associated with the question. A respondent may have had more than one specific answer or some respondents may not have responded to the interview question.

The purpose of this question was to understand how each organization's primary goals aligned with the Beyond 34 platform in Cincinnati. The interview protocol included a prompt for any organization that had no specific goals related to Beyond 34's focus to explore whether it was planning to develop any such goals. All organizations the team spoke with, however, did indicate that they had such goals already. Responses to goals for Beyond 34 are split up into five categories: more end users/more participation to increase recycling rates, food waste, education, waste reduction, and increase cost of the landfill.

The most common responses were focused on identifying more end users for materials and increasing participation to increase recycling rates. Seven respondents (44%) mentioned their goals for Beyond 34 were to identify more end-user agencies, increase

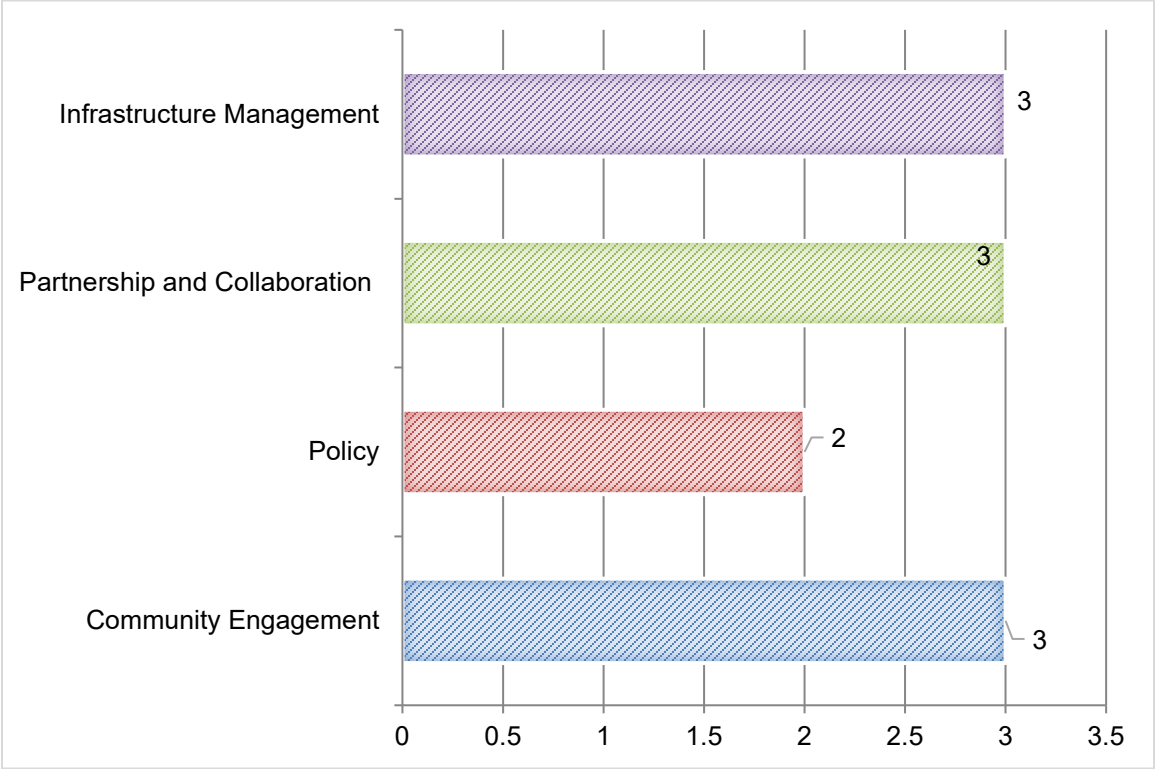
the participation rate, or increase recycling rates (Figure 5). More specifically, these responses ranged from finding end-users to reusing recycled products on a long-term basis to increase recycling to 25% by 2020. One respondent specified that their organization's goals for the Beyond 34 project were focused on “increasing recycling at the commercial sectors because they are large waste producers.”

Education and waste reduction were the second most common responses to organizational goals for Beyond 34. Four respondents (25%) mentioned education and four respondents (25%) mentioned waste reduction (Figure 5). More specifically, the education responses referred to education programs at the school district level, outreach programs for children and adults, and educating people about the reality of recycling. One respondent specified that their organization's goals for the Beyond 34 project were focused on “educating and preventing wasteful behaviors.” The waste reduction responses referred to being focused on waste reduction rather than increasing recycling rates. One respondent specified that their organization's goals for the Beyond 34 project were focused on the implementation of zero waste programs throughout Cincinnati.

The least common response was focused on increasing landfill costs. Only one respondent specified that their primary goal for Beyond 34 was to implement a version of a pay-as-you-throw program that had previously not been allowed by the city (Figure 5).

2.5. Of these goals, which ones are working well, and which ones are not working well?

Figure 6: Goals That Are Working Well



Note: The graph shows the number of total responses and keywords associated with the question. A respondent may have had more than one specific answer or some respondents may not have responded to the interview question. Percentages are based on the total number of responses.

The purpose of this question was to explore what is working well or not working well from each respondent's perspective in terms of recycling, waste reduction, etc. Responses to goals that are working well are split up into four categories: community engagement, policy, partnership and collaboration, and infrastructure management.

Community engagement, infrastructure management, and partnership/collaboration were the most common responses for goals that were working well for organizations. Each previously mentioned topic area had three respondents (19% per topic) each mention them (Figure 6).

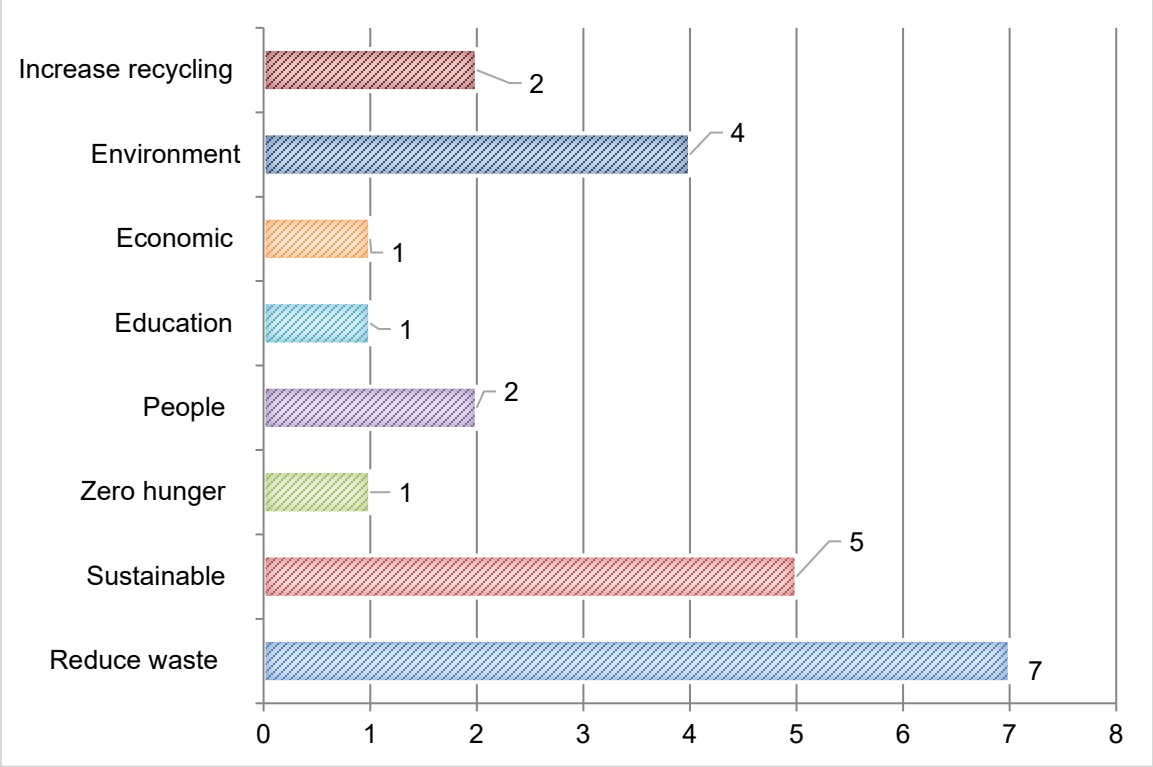
More specifically, the community engagement responses referred to community programs and participation to introduce residents and companies to local community

waste reduction programs One respondent specified that they believe that “communities that pay for recycling efforts are more engaged.” The infrastructure management responses referred to recycling events, waste management teams, and the need for more infrastructure to handle all of the recycled materials. One respondent specified that they believe that “food waste management on a larger basis in Cincinnati is needed.” Lastly, the partnership/collaboration responses referred to collaborating with individuals to increase recycling education throughout Cincinnati and partnering with local agencies in order to reduce and reuse materials. One respondent specified that they believe that “working with other organizations would help improve the quality of recycling.”

The policy category was only mentioned twice (13%) during the stakeholder interviews.

2.6. Where in your organization would you say is the motivation for recycling or supporting waste diversion coming from?

Figure 7: Organizational Motivation for Recycling



Note: The graph shows the number of total responses and keywords associated with the question. A respondent may have had more than one specific answer. Percentages are based on the total number of responses.

The purpose of this question was to identify each organization's motivations for recycling and waste diversion. Responses to organizational motivation for recycling are split up into eight categories: reduce waste, education, sustainable, economic, zero hunger, environment, people, and increase recycling.

The most common responses were focused on reducing waste to improve recycling and waste diversion. Seven respondents (44%) mentioned that their organizational motivations were to reduce waste (Figure 7). One respondent specified that their organization's motivations were focused on the fact that their organization's mission is to increase recycling and reduce waste.

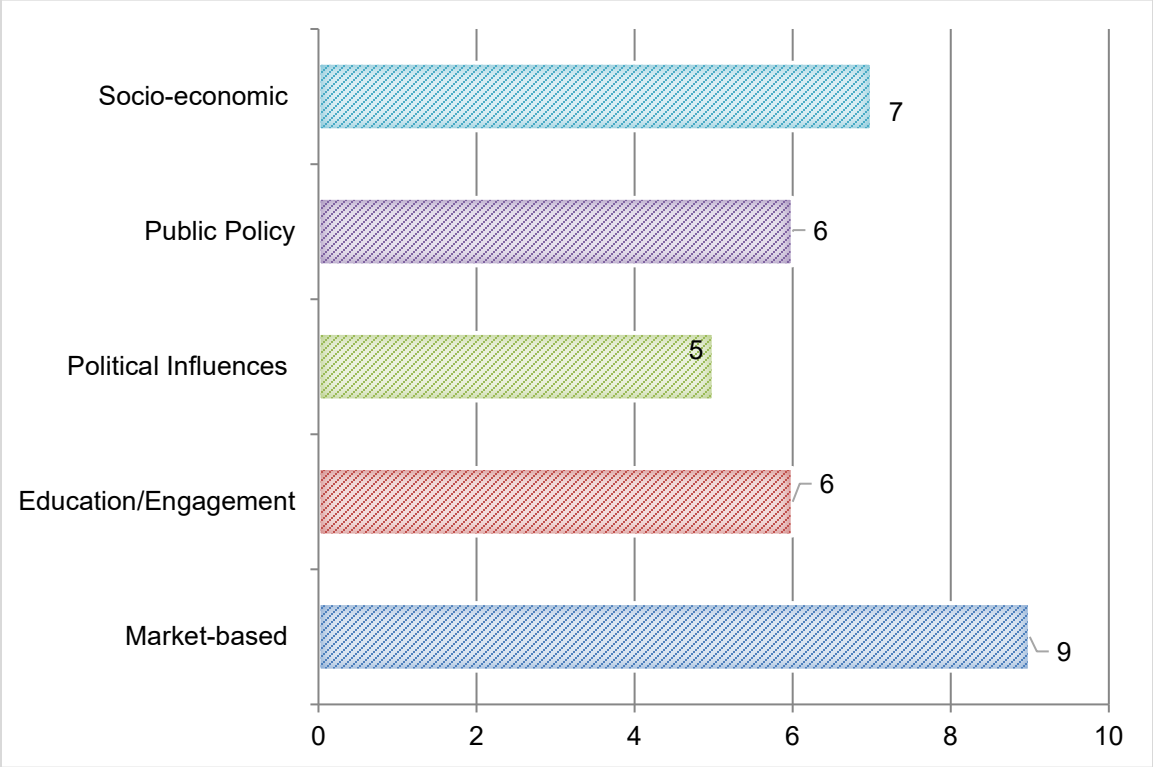
The second most common response was focused on sustainability. Two respondents (13%) mentioned that their organizational motivations were to promote sustainability

(Figure 7). More specifically, these responses ranged from zero waste and social impact planning to sustainable community tactics. One respondent specified that their organization's motivations were based on the belief that "sustainable communities cost less money, they are healthier, improve and protect human health, and save resources."

The least common responses for organizational motivations for recycling and waste diversion were focused on economic, zero hunger, and education with each topic only having one respondent per topic area (Figure 7).

2.7. What are the most influential barriers that are impeding recycling in your community and greater Cincinnati metro?

Figure 8: Influential Barriers



Note: The graph shows the number of total responses and keywords associated with the question. A respondent may have had more than one specific answer. Percentages are based on the total number of responses.

The purpose of this question was to identify the major barriers (political, economic, etc.) that local organizations felt would prevent recycling efforts from being successful in their own communities and in Cincinnati as a whole. Additionally, this question explored current actions undertaken by local organizations to overcome these barriers. Responses to influential barriers are split up into five categories: market-based, public policy, educational/engagement, political influences, and socio-economic.

The most common responses were focused on market-based barriers. Nine respondents (56%) mentioned that market-based barriers are the most influential (Figure 8). These responses identified market-based barriers as playing a major role in waste reduction due to the high cost of handling organic waste relative to inexpensive tipping fees. One respondent specified that they believed that the most cost-effective

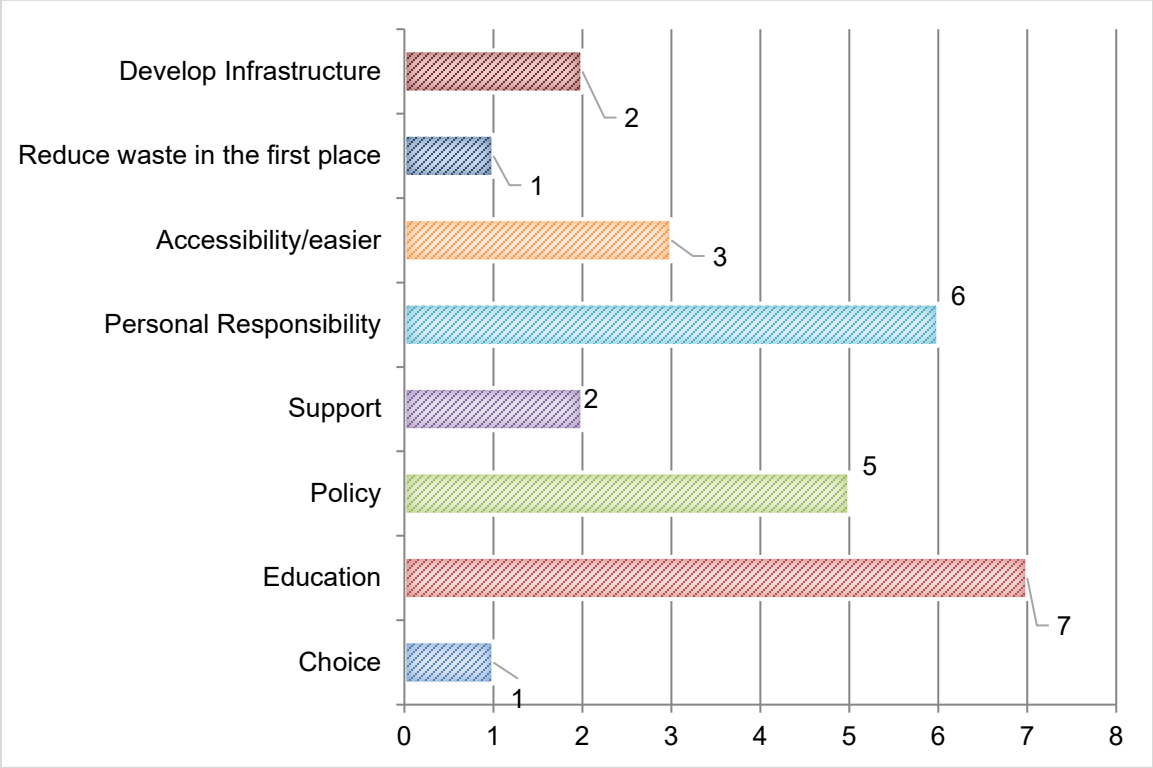
processes--sending organic waste to landfill instead of to an organics processor--would be heavily favored over more expensive processes and that overcoming this preference is the most challenging barrier.

The second most common set of responses focused on socio-economic barriers, which are parallel to market-based barriers. Seven respondents (44%) mentioned that socio-economic barriers are the most influential (Figure 8). Respondents who mentioned socio-economic barriers referred mainly to the challenges of operating in higher-income areas versus low-income areas and how to make recycling efforts accessible for all residents. One respondent specified that “poverty and culture attitudes play a huge role in how people recycle or if they will recycle.”

The least common response was focused on barriers pertaining to political influence. Five respondents (31%) mentioned that barriers of political influence are the most significant (Figure 8). Respondents who mentioned political influence barriers referred either to China’s ban on recyclables importation that has eliminated it as an end buyer of recycled material or to policies/regulations that need to be changed to improve recycling efforts. One respondent specified that “there are no regulations or policies for recycling, so it is hard to get people to start recycling.”

2.8. What do you believe is necessary to build support among your residents and/or customers for increased diversion of waste and the increase of recyclable materials?

Figure 9: Important Factors for Building Support for Recycling



Note: The graph shows the number of total responses and keywords associated with the question. A respondent may have had more than one specific answer. Percentages are based on the total number of responses.

The purpose of this question is to identify the most important factors to build support for recycling. Responses are split up into eight categories: choice, education, policy, support, personal responsibility, accessibility/easier, reduce waste in the first place, and develop infrastructure.

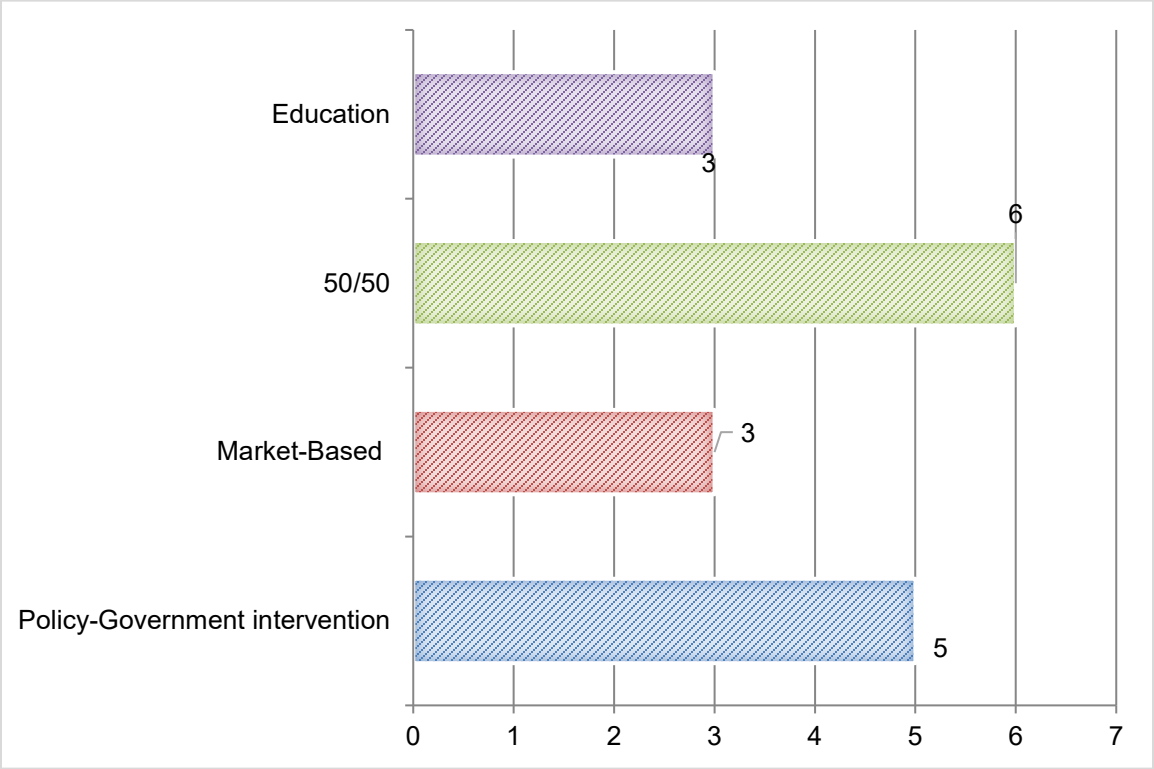
The most common responses were focused on education. Seven respondents (44%) mentioned that education is important for building support for recycling (Figure 9). These responses referred to implementing a broader educational message regarding recycling efforts. One respondent specified that “citizens need to see more of the economic benefits, and not just the cost savings.”

The second most common response was focused on personal responsibility. Six respondents (38%) mentioned that personal responsibility is an important factor for building support for recycling (Figure 9). Many of these respondents discussed that producers need to be held responsible for recycling efforts, not just consumers. One respondent specified that “individuals, businesses, and organizations’ motivation to start doing recycling is important.”

The least common responses were focused on reducing waste in the beginning and choice with each topic only having one respondent per topic area (Figure 9).

2.9. Considering the nature of the challenges in increasing waste diversion and recycling rates in the community, can you describe for us how you see the balance of government solutions and market-based solutions to addressing these goals?

Figure 10: Government vs. Market Approaches



Note: The graph shows the number of total responses and keywords associated with the question. A respondent may have had more than one specific answer. Percentages are based on the total number of responses.

The purpose of this question was to identify local opinions about the balance of government solutions and market-based solutions in achieving recycling and waste diversion goals. Responses are split up into four categories: policy-government intervention, market-based, education, and 50/50.

The most common responses affirmed a 50/50 balance, referring to an evenly balanced approach in terms of government and market-based solutions to address present and future waste reduction goals. Six respondents (38%) mentioned that a 50/50 balance between government solutions and market-based solutions should be used in order to

address recycling and waste reduction goals (Figure 10). One respondent specified that "there needs to be a balance between the government and the market-based solution."

The second most common response favored a policy-government intervention approach. Five respondents (31%) mentioned that a policy-government intervention approach should be used in order to address recycling and waste reduction goals (Figure 10). Many of these respondents discussed that there must be more governmental intervention in order to encourage and require recycling. One respondent specified that Cincinnati is in need of "more policies or regulations in place for waste management and recycling."

An educational approach and a market-based approach were the least common responses. Three respondents (19%) favored an educational approach to address present and future recycling and waste reduction goals and three respondents (19%) favored a market-based approach to address present and future recycling and waste reduction goals (Figure 9).

Recommendations

Although these interview results are in no way comprehensive, they do represent insights from a range of stakeholders in the Cincinnati region operating in the recycling space. Several consistent themes emerged from these interviews that have implications for future actions aimed at the Beyond 34 goals of increasing recycling rates and waste diversion in Cincinnati. The primary findings to help inform future discussions should include:

1. Expand opportunities to increase the diversion of organic waste through composting, food waste reduction, and food rescue programs.
2. Market-based solutions that will attract more end-users and infrastructure to increase economic incentives in the market space.
3. Education and outreach projects for schools and communities that ensure inclusivity for all citizens of Cincinnati.
4. Consumer accountability and acknowledgment by citizens on the impacts that waste diversion and recycling have on their communities.

Additional research and future data collection will help to inform a more comprehensive perspective to aid in the development of specific policy recommendations. Local efforts in the community and convenings around these goals can build on these results and advance the policy discussions in a manner that is sensitive to the needs and local context of the Cincinnati region.

Appendix: Full List of Interview Questions

1. What is your official title?
2. Please tell me about your primary duties in the “organization.”
3. Can you tell me what “the organization’s” priorities are for waste management regarding recycling and diversion efforts concerning various materials now and in the future?
    - How are your recycling efforts executed?
4. Does your organization have any specific goals regarding increasing recycling efforts?
    - What are those goals?
    - Which of these would you say is the primary goal for your organization regarding beyond 34?
    - If no specific goals (if your organization was to develop a goal for Beyond 34), what goal do you believe would be more likely for your organization to adapt? (if no goals, skip to Q6)
5. Of these goals, which ones are working well, and which ones are not working well?
6. Where in your organization would you say is the motivation for recycling or supporting waste diversion coming from?
7. What are the most influential barriers that are impeding recycling in your community and greater Cincinnati metro?

    (prompt)
    - Any political concerns? (provide examples)
    - Collaboration and planning efforts? (provide examples)
    - Data collection methods? (provide examples)
    - Logistical concerns? (provide examples)
    - Any socio-economic concerns? (such as low-income communities)
8. What do you believe is necessary to build support among your residents and/or customers for increased diversion of waste and the increase of recyclable materials?
9. Considering the nature of the challenges in increasing waste diversion and recycling rates in the community, can you describe for us how you see the balance of government solutions and market-based solutions to addressing these goals?

References

Brokeronline. (2019). “Example of Using the Framework for Institutional Analysis.” Retrieved from http://www.thebrokeronline.eu/Articles/Shaping-behaviour/Example-of-using-the-framework-for-institutional-analysis

Buch R, Evans A (March 2020). “Reuse, Repair & Recycle: Economic Impact Estimates in Hamilton County, 2018.” Arizona State University whitepaper prepared for U.S. Chamber of Commerce Foundation, City of Cincinnati Office of Environment and Sustainability, and Hamilton County Recycling and Solid Waste District.

Cohen D, Crabtree B, “Qualitative Research Guidelines Project.” July 2006 http://www.qualres.org/HomeGrou-3589.html

EREF. (2018, April). Analysis of MSW Landfill Tipping Fees. Retrieved July 28, 2019, from https://erefdn.org/product/analysis-msw-landfill-tipping-fees-2/

Glaser, BG. & Strauss, AL. (1967). *The Discovery of Grounded Theory: Strategies for Qualitative Research.* New York: Aldine De Gruyter.

Hamilton County Recycling and Solid Waste District. (2018). Residential Recycling Statistics. Retrieved August 1, 2019, from http://www.hamiltoncountyrecycles.org/local_governments/residential_recycling_stats

Hamilton County Recycling and Solid Waste District. (2019). Solid Waste Management Plan Update. Retrieved July 20, 2019, from http://www.hamiltoncountyrecycles.org/about_us/solid_waste_management_plan_update

Ivey, Jean. "What Is Grounded Theory?" Pediatric Nursing 43.6 (2017): 288-308. Web.

Li, R. (2019, April 3). “Ohio EPA Poised to Issue Decision on Proposed Rumpke Landfill Expansion.” Retrieved August 7, 2019, from https://www.wastedive.com/news/ohio-epa-proposed-rumpke-landfill-expansion/551935/

Millward, E. (2019, March 22). Rumpke Landfill Expansion Approaching Final State Decision. Retrieved August 5, 2019, from https://www.wcpo.com/news/local-news/hamilton-county/colerain-township/rumpke-landfill-expansion-approaching-final-state-decision

Nigussie, Tsunekawa, Haregeweyn, Adgo, Cochrane, Floquet, and Abele. "Applying Ostrom’s Institutional Analysis and Development Framework to Soil and Water Conservation Activities in North-western Ethiopia." *Land Use Policy* 71 (2018): 1-10. Web.

OECD. (2015, January). *Environment at a Glance 2015.* Retrieved July 15, 2019, from https://read.oecd-ilibrary.org/environment/environment-at-a-glance-2015_9789264235199-en#page52

Ohio EPA. (2018, December). *2017 Reduction and Recycling Statistics* (Issue brief No. 1008). Retrieved August 1, 2019, from Division of Materials and Waste Management website: https://epa.ohio.gov/portals/34/document/guidance/gd_1011.pdf

Ostrom, E. (2005). *Understanding Institutional Diversity.* Princeton, NJ: Princeton University Press.

Vries, M. S. D., & Kim, P. S. (2011). *Value and Virtue in Public Administration A Comparative Perspective (pp.121)*. London: Palgrave Macmillan UK.

Parletta, N. (2019, July 15). "How a Whole City Plans to Close the Loop On Waste." Retrieved July 24, 2019, from https://www.forbes.com/sites/natalieparletta/2019/07/15/how-a-whole-city-plans-to-close-the-loop-on-waste/#797387d16e7a

Petit-Boix, Anna & Leipold, Sina. (2018). "Circular economy in cities: Reviewing how environmental research aligns with local practices." *Journal of Cleaner Production.* 195. 10.1016/j.jclepro.2018.05.281.

Public Interest Center. (2019, March 19). Ohio EPA News Releases. Retrieved August 1, 2019, from https://www.epa.state.oh.us/News/Online-News-Room/News-Releases/public-meeting-to-discuss-rumpke-landfills-proposed-expansion-3-19

Tietenberg, T., & Lewis, L. (2018). *Environmental and natural resource economics* (10th ed.). London: Routledge.

US EPA. (2016, January 31). *Recycling Economic Information (REI) Report.* Retrieved July 10, 2019, from https://www.epa.gov/smm/recycling-economic-information-rei-report

US EPA Region 10. (2011, November). *Reducing Greenhouse Gas Emissions through Recycling and Composting*. Retrieved July 29, 2019, from US EPA website: https://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=P100AWCJ.txt

Van Houtven, G., & Morris, G. (1999). "Household Behavior under Alternative Pay-as-You-Throw Systems for Solid Waste Disposal." *Land Economics*, 75(4): 515-537. doi:10.2307/3147063

Wageingen University and Research. (2012). Institutional analysis. Retrieved August 1, 2019, from http://www.mspguide.org/tool/institutional-analysis